What is claimed is:

1. A digital computer system that correlates positional input data for generating a 3-D virtual image, representational of a localized terrain over which a vehicle is traveling, comprising:

a positional information unit which receives the positional input data provided by a satellite-based positioning system;

a terrain database unit, containing data of the localized terrain over which the vehicle is traveling; and

an image generation processing unit having a render engine which receives data from the positional information unit and the terrain database unit and which generates the 3-D virtual image representational of the terrain over which the vehicle is traveling.

2. The system of claim 1, wherein the positional input data is a GPS data provided from a Global Positioning Satellite (GPS) unit.

3. The system of claim 2, wherein the GPS data contains information about the latitude, the longitude, time, and the altitude of the vehicle.

4. The system of claim 3, wherein the GPS data additionally contains information about the velocity of the vehicle.

5. The system of claim 1, wherein the 3-D virtual image is generated at a real-time rate.

6. The system of claim 1, wherein the system further comprises:

a location calculation unit which receives the positional input data from the positional information unit and generates a most recent spatial location of the vehicle in the localized terrain over which the vehicle is traveling.

7. The system of claim 6, wherein the image generation processing unit generates the 3-D virtual image by referencing the most recent spatial location of the vehicle in the localized terrain over which the vehicle is traveling in order to compute a heading, a pitch, and a directional vector of a current position of the vehicle, wherein the most recent spatial location of the vehicle is generated by the location calculation unit.

8. The system of claim 7, wherein the heading and the pitch of the current position of the vehicle are computed through the use of a lookup table.

9. The system of claim 1, wherein the positional information unit receives the positional input data by sampling the positional input data.

10. The system of claim 9, wherein the positional information unit periodically samples the positional input data at a rate of least every ½ second.

11. The system of claim 1, wherein the image generation processing unit generates the 3-D virtual image by referencing a most recent spatial location of the vehicle in the localized terrain over which the vehicle is traveling in order to compute a heading and a pitch of a current position of the vehicle, wherein the most recent spatial location of the vehicle is generated by a location calculation unit which receives the positional input data from the positional information unit.

12. The system of claim 11, wherein the heading and the pitch of the current position of the vehicle are computed through the use of a lookup table.

13. A method for generating a 3-D virtual image representational of a localized terrain over which a vehicle is traveling, comprising the steps of:

receiving positional input data provided by a satellite-based positioning system which provides latitude data, longitude data, altitude data, and time data to define a spatial location representative of an eye point position seen by an operator of the vehicle in the terrain over which the vehicle is traveling;

deriving an initial positional reading of the vehicle at time T1 from the sampled GPS data, wherein the initial positional reading at time T1 is represented as A = (X_1, Y_1, Z_1, T_1) where X_1 is representative of latitude at time T1, Y_1 is representative of longitude at time T1, and Z_1 is representative of altitude at time T1;

deriving a subsequent positional reading of the vehicle at time T2 from the sampled GPS data, wherein the subsequent positional reading at time T2 is represented as B = (X_2, Y_2, Z_2, T_2) where X_2 is representative of latitude at time T2, Y_2 is representative of longitude at time T2, and Z_2 is representative of altitude at time T_2;

calculating a directional vector of the vehicle defined as the vector AB;

calculating the velocity of the vehicle according to the equation:

$$\frac{\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}}{(t_2 - t_1)}$$

generating a computer image representative of the eye point position seen by the operator of the vehicle and the directional vector of the vehicle, wherein the computer image is generated by a render engine of an image generation processing unit; and

overlaying the computer image representing the eye point position and the directional vector of the vehicle onto a simulated image of the terrain over which the vehicle is traveling to generate a 3-D virtual image.

14. The method of claim 13, comprising the further step of:

displaying the 3-D virtual image.

15. The method of claim 13, wherein the global positioning satellite data is differential global positioning satellite data.

16. The method of claim 13, wherein the step of generating the simulated image of the real-world based upon the GPS data that has been sampled is accomplished by an image generation processing block of a digital computer system.

17. The method of claim 13, wherein the step of receiving positional input data is accomplished by periodically sampling global positioning satellite (GPS) data.

18. The method of claim 17, wherein the GPS data is preferably sampled as often as possible.

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19. The method of claim 18, wherein the GPS data is sampled at least every ½ second.

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